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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Steven Verhaverbeke

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APPLIED MATERIALS, INC.

P. O. BOX 450A

SANTA CLARA, CA 95052

EXAMINER

MARKOFF, ALEXANDER

ART UNIT

PAPER NUMBER

1792

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/891,849	Applicant(s) VERHAVERBEKE ET AL.	
	Examiner Alexander Markoff	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-16, 18, 19, 22-25, 45, 46, 52 and 221-241 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-16, 18, 19, 22-25, 45, 46, 52 and 221-241 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-3, 5-16, 18, 19, 22-25, 45, 46, 52 and 221-241 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are indefinite because it is not clear what structure is required by the text introduced by "wherein" in the independent claims.

Claim Rejections - 35 USC § 102

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
4. Claims 1-3, 5, 7-9, 19, 22-25, 45, 224-226, 229-231, 235-237 and 239-241 are rejected under 35 U.S.C. 102(e) as being anticipated by Lorimer (US Patent No 6460,552).

Lorimer teaches an apparatus as claimed. See entire document, especially Figures, 4, 6, 7a and the related description and columns 9-12.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lorimer in view of Busnaina and JP 05-013396.

Lorimer teaches an apparatus as claimed except for specific disclosure of the operation frequencies of the ultrasonic transducers and the disclosure of the surface area of the transducers relative to the surface of the wafer.

JP 05-013396 teaches that the claimed frequencies were conventional.

Busnaina teaches that the claimed frequencies and ratios between the surface of transducers and wafers were known and teach such frequencies and ratios as preferred for providing efficient cleaning.

It would have been obvious to an ordinary artisan at the time the invention was made to provide the apparatus of Lorimer with transducers having frequencies as recommended by Busnaina and JP 05-013396 and area as recommended by Busnaina in order to achieve adequate cleaning in a relatively short time.

7. Claims 221-223, 227, 232-234 and 238 rejected under 35 U.S.C. 103(a) as being unpatentable over Lorimer in view of Puskas (US Patent No 6,036,785), Hayamizu (US 20020157685) and Ferrell (US Patent No 6,313,565).

Lorimer teaches an apparatus as claimed except for specific disclosure of the different frequencies for the transducers.

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Puskas, Hayamizu and Ferrell teach that it was known in the art that the use of different frequencies enhance the cleaning and minimize damage to the substrates and that frequencies should be selected depending from the type of contamination.

It would have been obvious to an ordinary artisan at the time the invention was made to provide transducers operating in different frequencies in the apparatus of Lorimer in order to enhance the cleaning action of the apparatus with reasonable expectation of success because Puskas and Ferrell recommend such.

Response to Arguments

8. Applicant's arguments filed 12/20/07 have been fully considered but they are not persuasive.

The applicants argue that the rejection made under 35 USc 112(2) is not proper because the functional language could be used to recite the structure of the apparatus.

The examiner would like to emphasize that while the functional language can be used to recite the structure, in the instant case it is not clear what structure is required by the text introduced by "wherein" in the independent claims.

The applicants again allege that Lorimer does not teach a second liquid dispenser. The applicants argue that Lorimer teaches the second fluid, which is not a liquid, but a vapor.

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This is not persuasive:

First, port (128, 138) of the apparatus of Lorimer is capable of delivering liquid. The claims merely require a liquid dispenser. Port (128, 138) is fully capable of performing the recited function or intended use. The claims are directed to the apparatus, not a method.

Second, the claims do not exclude delivering liquid as a vapor.

Third, Lorimer teaches condensation of the vapor on the wafer.

The fact that Lorimer recommends filtering the liquid in a vapor state does not change the fact that the liquid is delivered to the wafer.

The applicants again argue that claims 224 and 235 are not properly rejected as anticipated by Lorimer because the referenced claims recite a transparent frequency.

This is not persuasive.

Claims 224 and 235 merely state that the transducer has a transparent resonance frequency, but do not specify the frequency or the material to which it is "transparent".

The applicants argue that the rejection made under 35 USC 103 is not proper. The applicants state that to be optimized the parameter has to be recognized as a result effective variable. The applicants state that the specific frequency provides unexpected results.

This is not persuasive.

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First, the claims are directed to the apparatus, not a method. The prior art of the record shows that the transducers capable of providing the claimed frequencies were conventional in the art.

Second, the parameter of energy applied to enhance process is a result effective variable.

Third, JP 05-013396 is cited to show that it was well-known in the art that frequencies of the applied energy is a result effective variable and can be chosen depending from the application requirements.

Fourth, as per claim 16, the applicants claim the range which includes not only the “transparent” frequency”, but also other frequencies. The referenced range is plus/minus 30%.

Fifth, as per claim 18, the applicants claim a range less than 1.5 MHz, this range is not limited to the argued transparent frequencies.

The applicants again argue that the rejection over Lorimer in view of Puskas, Hayamizu and Ferrell is not proper.

The applicants argue that the claims require transducers capable of simultaneously transmitting frequencies.

The applicants allege that Hayamizu does not teach simultaneous application of different frequencies, that Ferrell teaches only a single frequency and that Puskas has a different mode of operation.

This is not persuasive.

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First, it is again noted that the claims are directed to an apparatus, not a method. More over, the claims merely recite transducers capable of performing simultaneous application. The transducers in modified apparatus of Lorimer would be fully capable of such. The claims recite only ability of transducers, not the structure to enable functioning.

Second, in contrast to the applicants non-supported statement Ferrell teaches application of different frequencies.

Third, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Allowable Subject Matter

9. Claims 6, 10-12, 14, 15, 46, 52 and 228 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach or suggest to modify the apparatus of Lorimer to make the bracket rotatable relative to the platter.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Markoff whose telephone number is 571-272-1304. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexander Markoff/
Primary Examiner, Art Unit 1792

AM